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Relevance scale **1 Videodraw: a video interface for collaborative drawing**

John C. Tang, Scott L. Minneman

April 1991 **ACM Transactions on Information Systems (TOIS)**, Volume 9 Issue 2Full text available:  [pdf\(1.39 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** collaborative systems, gestural interfaces, shared drawing, user interface, video technology, work practice analysis

**2 VideoDraw: a video interface for collaborative drawing**

John C. Tang, Scott L. Minneman

March 1990 **Proceedings of the SIGCHI conference on Human factors in computing systems: Empowering people**Full text available:  [pdf\(1.13 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes VideoDraw, a shared drawing tool, and the process by which it is being designed and developed. VideoDraw is a prototype, videobased, tool that provides a shared "virtual sketchbook" among two or more collaborators. It not only allows the collaborators to see each others' drawings, but also conveys the accompanying hand gestures and the process of creating and using those drawings. Its design stems from studying how people collaborate using shared drawing spa ...

**3 Surface drawing: creating organic 3D shapes with the hand and tangible tools**

Steven Schkolne, Michael Pruitt, Peter Schröder

March 2001 **Proceedings of the SIGCHI conference on Human factors in computing systems**Full text available:  [pdf\(12.98 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Surface Drawing is a system for creating organic 3D shapes in a manner which supports the needs and interests of artists. This medium facilitates the early stages of creative design which many 3D modeling programs neglect. Much like traditional media such as line drawing and painting, Surface Drawing lets users construct shapes through repeated marking. In our case, the hand is used to mark 3D space in a semi-immersive virtual environment. The interface is completed with tangible tools to e ...

**Keywords:** 3D modeling, artistic shape creation, design prototyping, fine art, hand-based interface, repeated marking, semi-immersive environment, tangible user interface

#### 4 A mark-based interaction paradigm for free-hand drawing

Thomas Baudel

November 1994 **Proceedings of the 7th annual ACM symposium on User interface software and technology**

Full text available:  pdf(761.39 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We propose an interaction technique for editing splines that is aimed at professional graphic designers. These users do not take full advantage of existing spline editing software because their mental representations of drawings do not match the underlying conceptual model of the software. Although editing splines by specifying control points and tangents may be appropriate for engineers, graphic designers think more in terms of strokes, shapes, and gestures appropriate for editing drawings ...

**Keywords:** CAD, gestures, graphic design, interaction models, mark-based interaction, spline editing

#### 5 Gesturing with shared drawing tools

Catherine G. Wolf, James R. Rhyne

April 1993 **INTERACT '93 and CHI '93 conference companion on Human factors in computing systems**

Full text available:  pdf(243.03 KB)

Additional Information: [full citation](#), [references](#)

#### 6 Interactive two-handed gesture interface in 3D virtual environments

Hiroaki Nishino, Kouichi Utsumiya, Daisuke Kuraoka, Kenji Yoshioka, Kazuyoshi Korida

September 1997 **Proceedings of the ACM symposium on Virtual reality software and technology**

Full text available:  pdf(1.21 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

#### 7 Posters: Mouthbrush: drawing and painting by hand and mouth

Chi-ho Chan, Michael J. Lyons, Nobuji Tetsutani

November 2003 **Proceedings of the 5th international conference on Multimodal interfaces**

Full text available:  pdf(501.72 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a novel multimodal interface which permits users to draw or paint using coordinated gestures of hand and mouth. A headworn camera captures an image of the mouth and the mouth cavity region is extracted by Fisher discriminant analysis of the pixel colour information. A normalized area parameter is read by a drawing or painting program to allow read-time gestural control of pen/brush parameters by mouth gesture while sketching with a digital pen/tablet. A new performance task, the Radiu ...

**Keywords:** alternative input devices, mouth controller, vision-based interface

#### 8

Posters: Gestural communication over video stream: supporting multimodal interaction for remote collaborative physical tasks

Jiazh Ou, Susan R. Fussell, Xilin Chen, Leslie D. Setlock, Jie Yang  
November 2003 **Proceedings of the 5th international conference on Multimodal interfaces**

Full text available:  pdf(333.47 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a system integrating gesture and live video to support collaboration on physical tasks. The architecture combines network IP cameras, desktop PCs, and tablet PCs to allow a remote helper to draw on a video feed of a workspace as he/she provides task instructions. A gesture recognition component enables the system both to normalize freehand drawings to facilitate communication with remote partners and to use pen-based input as a camera control device. Results of a preliminary user stud ...

**Keywords:** computer-supported cooperative work, gestural communication, gesture recognition, multimodal interaction, video conferencing, video mediated communication, video stream

**9 Interaction: Beyond-me site: two-handed interface for 3D drawing in MR** 

Tomoki Saso, Takeru Tamayama, Masa Inakage

February 2003 **Proceedings of the 1st international conference on Computer graphics and interactive techniques in Australasia and South East Asia**

Full text available:  pdf(1.93 MB) Additional Information: [full citation](#), [abstract](#), [references](#)

"Beyond-Me Site" is a 3D Mixed Reality (MR) gestural drawing system (Figure 1), for which two hands are used. Unlike other MR systems, the device does not require a Head Mounted Display (HMD). Instead, one hand holds the camera and the other hand holds the drawing pad. The HMD, which is widely employed in MR systems, has several problems for use in daily life, such as its cost and awkwardness. We present, therefore, a camera-based, low-cost solution to replace the HMD interface. In our system, th ...

**10 Analysis of gestures in face-to-face design teams provides guidance for how to use groupware in design** 

Mathilde M. Bekker, Judith S. Olson, Gary M. Olson

August 1995 **Proceedings of the conference on Designing interactive systems: processes, practices, methods, & techniques**

Full text available:  pdf(902.99 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**11 Charade: remote control of objects using free-hand gestures** 

Thomas Baudel, Michel Beaudouin-Lafon

July 1993 **Communications of the ACM**, Volume 36 Issue 7

Full text available:  pdf(2.66 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#), [review](#)

**Keywords:** augmented reality, hand gesture input, interaction model, remote control

**12 ClearBoard: a seamless medium for shared drawing and conversation with eye contact** 

Hiroshi Ishii, Minoru Kobayashi

June 1992 **Proceedings of the SIGCHI conference on Human factors in computing systems**

Full text available:  pdf(2.83 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces a novel shared drawing medium called ClearBoard. It realizes (1) a seamless shared drawing space and (2) eye contact to support realtime and remote collaboration by two users. We devised the key metaphor: "talking through and drawing on a transparent glass window" to design ClearBoard. A prototype of ClearBoard is implemented based on the "Drafter-Mirror" architecture. This paper first reviews previous work on s ...

### **13 Two-Handed Interaction: Creating principal 3D curves with digital tape drawing**

Tovi Grossman, Ravin Balakrishnan, Gordon Kurtenbach, George Fitzmaurice, Azam Khan, Bill Buxton

April 2002 **Proceedings of the SIGCHI conference on Human factors in computing systems: Changing our world, changing ourselves**

Full text available:  pdf(943.56 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Previous systems have explored the challenges of designing an interface for automotive styling which combine the metaphor of 2D drawing using physical tape with the simultaneous creation and management of a corresponding virtual 3D model. These systems have been limited to only 2D planar curves while typically the principal characteristic curves of an automotive design are three dimensional and non-planar. We present a system which addresses this limitation. Our system allows a designer to const ...

**Keywords:** 3D modeling, interaction techniques, large scale displays, tape drawing, two-handed interaction

### **14 VisionWand: interaction techniques for large displays using a passive wand tracked in**

**3D**

Xiang Cao, Ravin Balakrishnan

November 2003 **Proceedings of the 16th annual ACM symposium on User interface software and technology**

Full text available:  pdf(3.36 MB)  mov(3:20 MIN)  wmv(3:20 MIN)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A passive wand tracked in 3D using computer vision techniques is explored as a new input mechanism for interacting with large displays. We demonstrate a variety of interaction techniques that exploit the affordances of the wand, resulting in an effective interface for large scale interaction. The lack of any buttons or other electronics on the wand presents a challenge that we address by developing a set of postures and gestures to track state and enable command input. We also describe the use o ...

**Keywords:** buttonless input, gestures, input devices, interaction techniques, large displays, vision tracking

### **15 Integration of interpersonal space and shared workspace: ClearBoard design and experiments**

Hiroshi Ishii, Minoru Kobayashi, Jonathan Grudin

October 1993 **ACM Transactions on Information Systems (TOIS)**, Volume 11 Issue 4

Full text available:  pdf(2.91 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We describe the evolution of the novel shared drawing medium ClearBoard which was designed to seamlessly integrate an interpersonal space and a shared workspace. ClearBoard permits coworkers in two locations to draw with color markers or with electronic pens and software tools while maintaining direct eye contact and the ability to employ

natural gestures. The ClearBoard design is based on the key metaphor of "talking through and drawing on a transparent glass window." We descri ...

**Keywords:** eye contact, gaze awareness, gaze direction, groupware, seamless design, shared drawing, video conference

**16 Incremental recognition in gesture-based and syntax-directed diagram editors**

Rui Zhao

May 1993 **Proceedings of the SIGCHI conference on Human factors in computing systems**

Full text available:  pdf(733.01 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** diagram editors, diagram languages, gestural interfaces, incremental recognition, pen-based computers

**17 Integration of inter-personal space and shared workspace: ClearBoard design and experiments**

Hiroshi Ishii, Minoru Kobayashi, Jonathan Grudin

December 1992 **Proceedings of the 1992 ACM conference on Computer-supported cooperative work**

Full text available:  pdf(1.42 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** ClearBoard, TeamPaint, eye contact, gaze awareness, groupware, shared drawing, video conference

**18 Sketching in 3D**

Robert Zeleznik

November 1998 **ACM SIGGRAPH Computer Graphics**, Volume 32 Issue 4

Full text available:  pdf(488.44 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Of the numerous changes to the implements for creating 2D images and 3D models, one of the most radical has been the recent adoption of WIMP interfaces. Ironically, there is good reason to believe that WIMP interaction for 3D modeling is actually inferior to the real-world interfaces (pencils, large sheets of paper, clay, paint palettes) that it supplants. In fact, WIMP interaction's principal benefit is its straightforward integration with computer 3D model representations which have many advan ...

**19 User tests and multimodal gesture: Untethered gesture acquisition and recognition for a multimodal conversational system**

T. Ko, D. Demirdjian, T. Darrell

November 2003 **Proceedings of the 5th international conference on Multimodal interfaces**

Full text available:  pdf(81.49 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Humans use a combination of gesture and speech to convey meaning, and usually do so without holding a device or pointer. We present a system that incorporates body tracking and gesture recognition for an untethered human-computer interface. This research focuses on a module that provides parameterized gesture recognition, using various machine learning techniques. We train the support vector classifier to model the boundary of the

space of possible gestures, and train Hidden Markov Models on spe ...

**Keywords:** articulated tracking, hidden Markov models, speech, support vector machines, vision

20 [VideoWhiteboard: video shadows to support remote collaboration](#)



John C. Tang, Scott Minneman

March 1991 **Proceedings of the SIGCHI conference on Human factors in computing systems: Reaching through technology**

Full text available: [pdf\(1.45 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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## 21 Digital tape drawing

Ravin Balakrishnan, George Fitzmaurice, Gordon Kurtenbach, William Buxton

November 1999 **Proceedings of the 12th annual ACM symposium on User interface software and technology**

Full text available:  [pdf\(517.47 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Tape drawing is the art of creating sketches on large scale upright surfaces using black photographic tape. Typically used in the automotive industry, it is an important part of the automotive design process that is currently not computerized. We analyze and describe the unique aspects of tape drawing, and use this knowledge to design and implement a digital tape drawing system. Our system retains the fundamental interaction and visual affordances of the traditional media while leveraging t ...

**Keywords:** automotive design, interaction techniques, large-scale displays, tape drawing, two-handed input

## 22 Toward an open shared workspace: computer and video fusion approach of TeamWorkStation

Hiroshi Ishii, Naomi Miyake

December 1991 **Communications of the ACM**, Volume 34 Issue 12

Full text available:  [pdf\(6.54 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Groupware is intended to create a shared workspace that supports dynamic collaboration in a work group over space and time constraints. To gain the collective benefits of groupware use, the groupware must be accepted by a majority of workgroup members as a common tool. Groupware must overcome the hurdle of critical mass.

**Keywords:** CSCW, desktop multimedia conference, real-time collaboration, shared workspace

## 23 Commune: a shared drawing surface

S. A. Bly, S. L. Minneman

March 1990 **ACM SIGOIS Bulletin , Proceedings of the conference on Office information systems**, Volume 11 Issue 2-3

Full text available:  pdf(1.02 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Careful observation of small-group design sessions suggests that the process of creating, referring to, and using drawings may be as important to the design process as the drawings themselves. Based on studies of the uses of drawing spaces. Commune was developed to allow designers working remotely to share a drawing surface and to engage in many of the interactions available in conventional face-to-face situations. The design of Commune makes marks and 2-dimensional cursor gestures ...

**24 Novel interaction modalities II: Wearable virtual tablet: fingertip drawing on a portable plane-object using an active-infrared camera** 

Norimichi Ukita, Masatsugu Kidode

January 2004 **Proceedings of the 9th international conference on Intelligent user interface**

Full text available:  pdf(1.07 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We propose the *Wearable Virtual Tablet* (WVT), where a user can draw a locus on a common object with a plane surface (e.g., a notebook and a magazine) with a fingertip. Our previous WVT[1], however, could not work on a plane surface with complicated texture patterns: Since our WVT employs an active-infrared camera and the reflected infrared rays vary depending on patterns on a plane surface, it is difficult to estimate the motions of a fingertip and a plane surface from an observed infrared ...

**Keywords:** active-infrared camera, finger-drawing interface, wearable computer

**25 Interaction techniques for constrained Displays: Multimodal 'eyes-free' interaction techniques for wearable devices** 

Stephen Brewster, Joanna Lumsden, Marek Bell, Malcolm Hall, Stuart Tasker

April 2003 **Proceedings of the conference on Human factors in computing systems**

Full text available:  pdf(472.78 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Mobile and wearable computers present input/output problems due to limited screen space and interaction techniques. When mobile, users typically focus their visual attention on navigating their environment - making visually demanding interface designs hard to operate. This paper presents two multimodal interaction techniques designed to overcome these problems and allow truly mobile, 'eyes-free' device use. The first is a 3D audio radial pie menu that uses head gestures for selecting items. An ...

**Keywords:** gestural interaction, wearable computing

**26 A paradigm shift: alternative interaction techniques for use with mobile & wearable devices** 

Joanna Lumsden, Stephen Brewster

October 2003 **Proceedings of the 2003 conference of the Centre for Advanced Studies conference on Collaborative research**

Full text available:  pdf(251.70 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Desktop user interface design originates from the fact that users are stationary and can devote all of their visual resource to the application with which they are interacting. In contrast, users of mobile and wearable devices are typically in motion whilst using their device which means that they cannot devote all or any of their visual resource to interaction with the mobile application -- it must remain with the primary task, often for safety reasons. Additionally, such devices have limited s ...

**27 Modeling and generating sign language as animated line drawings**

Frank Godenschweger, Thomas Strothotte

January 1998 **Proceedings of the third international ACM conference on Assistive technologies**Full text available: [txt\(20.34 KB\)](#)Additional Information: [full citation](#), [references](#), [index terms](#)**28 A hand gesture interface device**

Thomas G. Zimmerman, Jaron Lanier, Chuck Blanchard, Steve Bryson, Young Harvill

May 1986 **ACM SIGCHI Bulletin , Proceedings of the SIGCHI/GI conference on Human factors in computing systems and graphics interface**, Volume 17 Issue SIFull text available: [pdf\(481.20 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper reports on the development of a hand to machine interface device that provides real-time gesture, position and orientation information. The key element is a glove and the device as a whole incorporates a collection of technologies. Analog flex sensors on the glove measure finger bending. Hand position and orientation are measured either by ultrasonics, providing five degrees of freedom, or magnetic flux sensors, which provide six degrees of freedom. Piezoceramic benders provide t ...

**Keywords:** gesture recognition, human interface, motor interface, tactile interface, user interface

**29 TeamWorkStation: towards a seamless shared workspace**

H. Ishii

September 1990 **Proceedings of the 1990 ACM conference on Computer-supported cooperative work**Full text available: [pdf\(1.48 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper introduces TeamWorkStation (TWS), a new desktop real-time shared workspace characterized by reduced cognitive seams. TWS integrates two existing kinds of individual workspaces, computers and desktops, to create a virtual shared workspace. The key ideas are the overlay of individual workspace images in a virtual shared workspace and the creation of a shared drawing surface. Because each co-worker can continue to use his/her favorite application programs or manual tools in the virt ...

**30 User interfaces: Designing a human-centered, multimodal GIS interface to support emergency management**

Ingmar Rauschert, Pyush Agrawal, Rajeev Sharma, Sven Fuhrmann, Isaac Brewer, Alan MacEachren

November 2002 **Proceedings of the tenth ACM international symposium on Advances in geographic information systems**Full text available: [pdf\(481.94 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Geospatial information is critical to effective, collaborative decision-making during emergency management situations; however conventional GIS are not suited for multi-user access and high-level abstract queries. Currently, decision makers do not always have the real time information they need; GIS analysts produce maps at the request of individual decision makers, often leading to overlapping requests with slow delivery times. In order to overcome these limitations, a paradigm shift in interfa ...

**Keywords:** GIS, collaborative work, human-centered design, interactive maps, multimodal human-computer-interface, speech and gesture recognition

**31 Synchronization of speech and hand gestures during multimodal human-computer interaction**

Marie-Luce Bourguet, Akio Ando

April 1998 **CHI 98 conference summary on Human factors in computing systems**

Full text available:  pdf(247.19 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

**Keywords:** hand gestures, multimodal interaction, predictive model, speech recognition, synchrony

**32 The music notepad**

Andrew Forsberg, Mark Dieterich, Robert Zeleznik

November 1998 **Proceedings of the 11th annual ACM symposium on User interface software and technology**

Full text available:  pdf(277.94 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** direct displays, gestural input, gesture recognition, handwriting recognition, interaction, music notation, user interface

**33 Video-based gesture interface to interactive movies**

Jakub Segen, Senthil Kumar

September 1998 **Proceedings of the sixth ACM international conference on Multimedia: Technologies for interactive movies**

Full text available:  pdf(713.38 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

**34 Tivoli: an electronic whiteboard for informal workgroup meetings**

Elin Rønby Pedersen, Kim McCall, Thomas P. Moran, Frank G. Halasz

May 1993 **Proceedings of the SIGCHI conference on Human factors in computing systems**

Full text available:  pdf(1.04 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes Tivoli, an electronic whiteboard application designed to support informal workgroup meetings and targeted to run on the Xerox Liveboard, a large screen, pen-based interactive display. Tivoli strives to provide its users with the simplicity, facile use, and easily understood functionality of conventional whiteboards, while at the same time taking advantage of the computational power of the Liveboard to support and augment its users' informal meeting practices. The paper ...

**35 Managing a trois: a study of a multi-user drawing tool in distributed design work**

Scott L. Minneman, Sara A. Bly

March 1991 **Proceedings of the SIGCHI conference on Human factors in computing systems: Reaching through technology**

Full text available:  pdf(1.14 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**36 3D object modeling using spatial and pictographic gestures**

Hiroaki Nishino, Kouichi Utsumiya, Kazuyoshi Korida

November 1998 **Proceedings of the ACM symposium on Virtual reality software and technology**

Full text available:  pdf(3.16 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** 3D object modeling, computer graphics, hand gesture interface, superquadrics, virtual environment

**37 Two pointer input for 3D interaction**

Robert C. Zeleznik, Andrew S. Forsberg, Paul S. Strauss

April 1997 **Proceedings of the 1997 symposium on Interactive 3D graphics**

Full text available:  pdf(758.32 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**38 Multi-finger and whole hand gestural interaction techniques for multi-user tabletop displays**

Mike Wu, Ravin Balakrishnan

November 2003 **Proceedings of the 16th annual ACM symposium on User interface software and technology**

Full text available:  pdf(1.10 MB) 

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)  
 wmv(3.4 MIN)

Recent advances in sensing technology have enabled a new generation of tabletop displays that can sense multiple points of input from several users simultaneously. However, apart from a few demonstration techniques [17], current user interfaces do not take advantage of this increased input bandwidth. We present a variety of multifinger and whole hand gestural interaction techniques for these displays that leverage and extend the types of actions that people perform when interacting on real physi ...

**Keywords:** collaborative and competitive applications, gestures, multi degree-of-freedom input, tabletop interaction

**39 Posters & demos: Hand tracking for human-computer interaction with Graylevel**

**Visual/Glove: turning back to the simple way**

Giancarlo Iannizzotto, Massimo Villari, Lorenzo Vita

November 2001 **Proceedings of the 2001 workshop on Perceptive user interfaces**

Full text available:  pdf(517.03 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Recent developments in the manufacturing and marketing of low power-consumption computers, small enough to be "worn" by users and remain almost invisible, have reintroduced the problem of overcoming the outdated paradigm of human-computer interaction based on use of a keyboard and a mouse. Approaches based on visual tracking seem to be the most promising, as they do not require any additional devices (gloves, etc.) and can be implemented with off-the-shelf devices such as webcams. Unfortunately, ...

**40 Programming complex objects in spreadsheets: an empirical study comparing textual formula entry with direct manipulation and gestures**

Herkimer J. Gottfried, Margaret M. Burnett

October 1997 **Papers presented at the seventh workshop on Empirical studies of**

**programmers**Full text available:  [pdf\(2.25 MB\)](#)Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

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